BOOK REVIEWS.

E. V. Wulff: An Introduction to Historical Plant Geography. Translated by Elizabeth Brissenden. Waltham, Mass., Chronica Botanica Co.; Johannesburg, Juta & Co. American price $4·75. 1943.

This valuable book, originally published ten years ago in Russia, has been brought up to date by the author and now reaches the English-speaking world in a quite admirable translation. Dr. Wulff is Curator of the Herbarium in the Dept. of Geography of Cultivated Plants, U.S.S.R. Institute of Plant Industry, Leningrad, and his work will increase the respect which Russian botanists have so justly won in the eyes of their colleagues in other countries.

It is understood that Dr. Wulff has two other books in a more or less advanced stage of preparation—one is a History of the Floras of the World, the other an account of the effects of human intervention in these floras. In this sense the present work may be regarded as an introduction: it cannot be considered an elementary text-book. It is a reasoned synthesis of a vast amount of detailed work, theory and speculation in a subject which is itself highly synthetic. It assumes a wide knowledge of distributional floristics, and may perhaps be criticised on the grounds of too little citation of the actual facts. A greater use of illustrative detail, although increasing the length of the book, would have made it more digestible.

The author deserves our thanks for making accessible much European literature, nowadays more difficult than ever to come by. (A postscript by Professor H. M. Raup adds many American references.) But he has two special claims to an important place in the development of the subject. One is the stress he lays on the historical basis of plant distribution. "Historical plant geography has as its aim the study of the distribution of plants now existing and, on the basis of their present and past areas, the elucidation of the origin and history of development of floras, which, in turn, gives us a key to the understanding of the earth's history. In this respect historical geography of animals and plants is a direct continuation of historical geology." We cannot understand present-day distribution without a knowledge of the facts revealed—however inadequately—by the study of fossil floras. Modern floras reflect the past history of the globe's climates and of its continents and oceans. It is fundamental to the argument that the dispersal and spread of species is normally a very slow, difficult and orderly affair, conditioned by geographical and climatic change ; and that evolutionary processes have made possible the enlargement of the climatic and edaphic ranges of groups with otherwise relatively small adaptability.

The other outstanding feature of the book is Dr. Wulff's wholehearted acceptance of the Wegener theory of floating continents and their permanence, and his belief that in this is to be found the solution to distributional problems. Combined with the further theory of the secular change in position of the poles and the rotation axis of the earth, resulting in a corresponding change in the location of the warmer and cooler zones of its surface, the Wegener theory is shown to be capable of explaining many remarkable facts in the past and present distribution of plants. This demonstration makes perhaps the most enthralling section of the book, in spite of lingering doubts as to the chronology of continental fission in relation to the origin of the Angiosperms.

It is regrettable, though perhaps unavoidable, that Southern Hemisphere distribution receives comparatively little attention, in spite of its enormous interest—whether from the Wegener or from any alternative point of view. One could wish that in his forthcoming books Dr. Wulff will have more to say on the floristic relationships between the three widely remote southern land masses and the Antarctic continent.

This volume is the tenth to be published in the excellent Chronica Botanica " New Series of Plant Science Books," and cordial thanks and congratulations are due to the general editor, Dr. Frans Verdoorn. It is the most significant addition to plant-geographical literature since Willis' " Age and Area." We may hope that Dr. Wulff's two further volumes may receive the same worthy presentation to readers in English.

R. H. Compton.

L. C. King. South African Scenery. 144 pl., 64 figs., 1 map. Oliver and Boyd. 1942. 31s. 6d. C.N.A.

This book has to the plant student in South Africa three main appeals. Firstly, from the point of view of the Clements-Phillips school of ecology, the concept of the climax is circumscribed more clearly by such passages as " the study of present-day scenery and of various processes acting upon it has shown that no part of the earth's surface can be regarded as static in the sense that no part endures in its present form for an indefinite period " (p. 44). Taken in conjunction with the clear exposition of " Cycles of Erosion " developed throughout the book, it is clear that the orderly series of events constituting the development of the climax take place against a background of a similarly ordered cycle of events culminating in a phase of equilibrium. To claim a possible correlation in time and space is not, unfortunately, possible, but one feels that the concept of the climax cannot continue to ignore the steadily changing topography which if not co-terminous is at least contemporaneous.

Secondly, there is for the student of plant geography, to whom our flora has presented so long a geographical puzzle, a ray of light in the demonstration that the mountainous escarpment has been present in more or less its present form, from at least early Miocene times. Coupled with Darrah's recent showing that " by Miocene times the forest types were strictly modern," this allows us to point to the eastern escarpment running up as it does through Rhodesia to Nyasaland and beyond, as a channel of migration.

Thirdly, there are several scattered points worthy of note. King recognises fully the cognate rôle of termites in Southern Africa to earthworms in Europe but " on the whole, apart from alluvial valley plains, South African soils may be described as ' green.' "

The two bald statements—" A wattle plantation on the other hand is practically non-effective as an agent for arresting soil erosion " and " the wattle plantations of Natal with bare soil between the trees, are almost non-effective as retardants of erosion by rainwash "—cannot but interest those who attended the Imperial Forestry Conference of 1936.

Finally, the statement (p. 67) : " Some idea of the importance of this factor may be gained from the following evaporation figures : Kimberley 87·65 inches, Northern Transvaal 75 inches and Southern Transvaal 60—70 inches per annum respectively. Other places are known where the amount exceeds 100 inches per year " makes one wish rather that the book were better referenced to original sources—perhaps the only real weakness of the work.

Recognising four Cycles of Erosion, the Arid, Marine, Glacial and Humid, King discusses these types with reference to Southern Africa—passes to discuss the topographic effects of eruptions (volcanic fissure subaqueous, etc.) and of land movement (uplift, depression, tilting and warping—refers to buried and ancient topographies " have been called . . . relicts "—and finally deals with the geomorphology of Southern Africa.

In time of war, new books tend to be rare, not only from a general diversion of interest to other spheres but also from a more practical shortage of paper and book-making facilities generally. Considerable credit is due to Dr. King and his publishers then for producing the present work, in that it lacks nothing in quality. We only regret its appearance in these times because inevitably it will not be as widely read as it deserves for some years. For there is here a genuine contribution to South African "Natural History" which will find its reflection in most future discussions of the South African scene, be it from the botanical, biological or geographical points of view.

H. B. Gilliland.